FIG. 1A

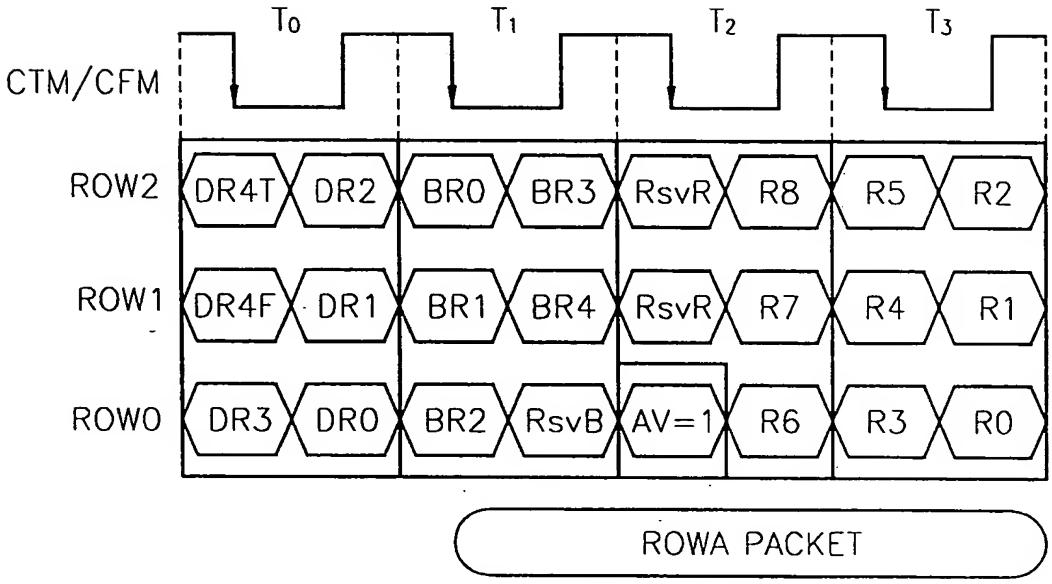
T0
T1
T2
T3
CTM/CFM
ROW2
DR4T
DR2
BR0
BR3
RsvR
R8
R5
R2
ROW1
DR4F
DR1
BR1
BR4
RsvR
R7
R4
R1
ROW0
DR3
DR0
BR2
RsvB
AV=1
R6
R3
R0
ROWA PACKET

FIG. 1B

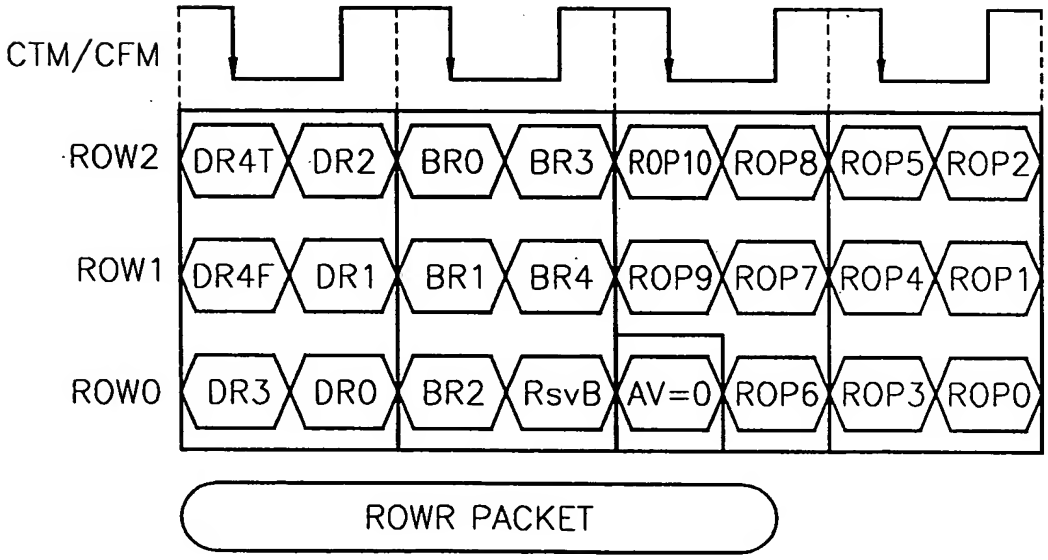
CTM/CFM
ROW2
DR4T
DR2
BR0
BR3
ROP10
ROP8
ROP5
ROP2
ROW1
DR4F
DR1
BR1
BR4
ROP9
ROP7
ROP4
ROP1
ROW0
DR3
DR0
BR2
RsvB
AV=0
ROP6
ROP3
ROP0
ROWR PACKET

FIG. 2

DM	AV	ROP10..ROP0 Field									Name	Command Description
		10	9	8	7	6	5	4	3	2:0		
0	0	–	–	–	–	–	–	–	–	•••	–	No operation.
1	1	Row address									ACT	Activate row R8..R0 of bank BR4..BR0 of device and move device to ATTN.
1	0	1	1	0	0	0	X	X	X	000	PRER	Precharge bank BR4..BR0 of this device.
1	0	0	0	0	1	1	0	0	X	000	REFA	Refresh (activate) row REFR8..REFR0 of bank BR4..BR0 of device. Increment REFR if BR4..BR0 = 1111 (see Figure).
1	0	1	0	1	0	1	0	0	X	000	REFP	Precharge bank BR4..BR0 of this device after REFA (see Figure).
1	0	X	X	0	0	0	0	1	X	000	PDNR	Move this device into the powerdown (PDN) power state (see Figure).
1	0	X	X	0	0	0	1	0	X	000	NAPR	Move this device into the nap (NAP) power state (see Figure).
1	0	X	X	0	0	0	1	1	X	000	NAPRC	Move this device into the nap (NAP) power state conditionally
1	0	X	X	X	X	X	X	X	0	000	ATTN	Move this device into the attention (ATTN) power state (see Figure).
1	0	X	X	X	X	X	X	X	1	000	RLXR	Move this device into the standby (STBY) power state (see Figure).
1	0	0	0	0	0	0	0	0	X	001	TCAL	Temperature calibrate this device (see Figure).
1	0	0	0	0	0	0	0	0	X	010	TCEN	Temperature calibrate/enable this device (see Figure).
1	0	0	0	0	0	0	0	0	0	000	NOROP	No operation.

COMMAND LIST OF ROWR PACKETS (COMMAND LIST)

FIG. 3

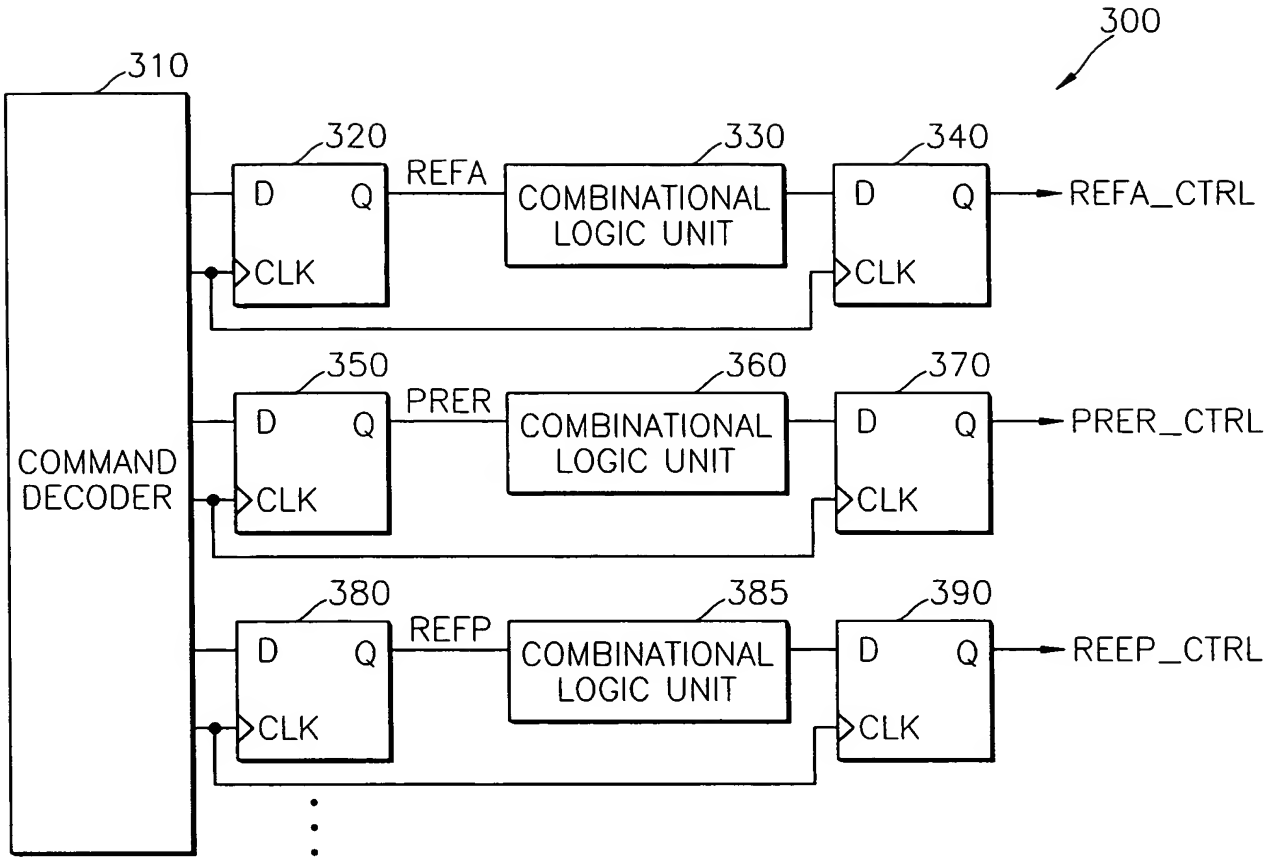
300
310
320
330
340
REFA
D
Q
CLK
COMBINATIONAL LOGIC UNIT
REFA_CTRL
350
360
370
PRER
PRER_CTRL
COMMAND DECODER
380
385
390
REFP
REEP_CTRL

FIG. 4

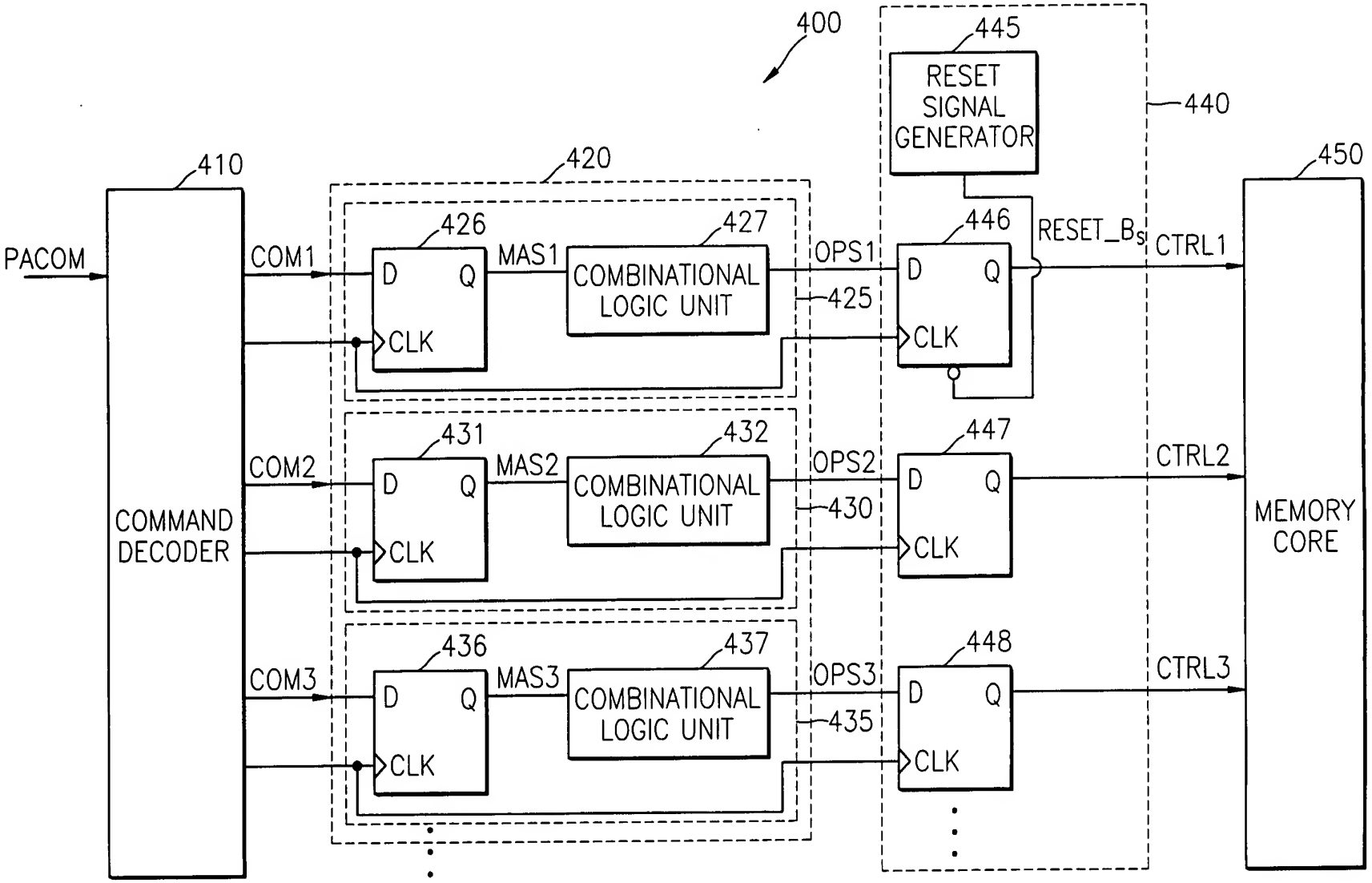
400
445
RESET SIGNAL GENERATOR
440
410
420
450
PACOM
COM1
426
MAS1
427
D
Q
CLK
COMBINATIONAL LOGIC UNIT
OPS1
425
446
RESET_Bs
CTRL1
COM2
431
MAS2
432
OPS2
430
447
CTRL2
COMMAND DECODER
MEMORY CORE
COM3
436
MAS3
437
OPS3
435
448
CTRL3

FIG. 5

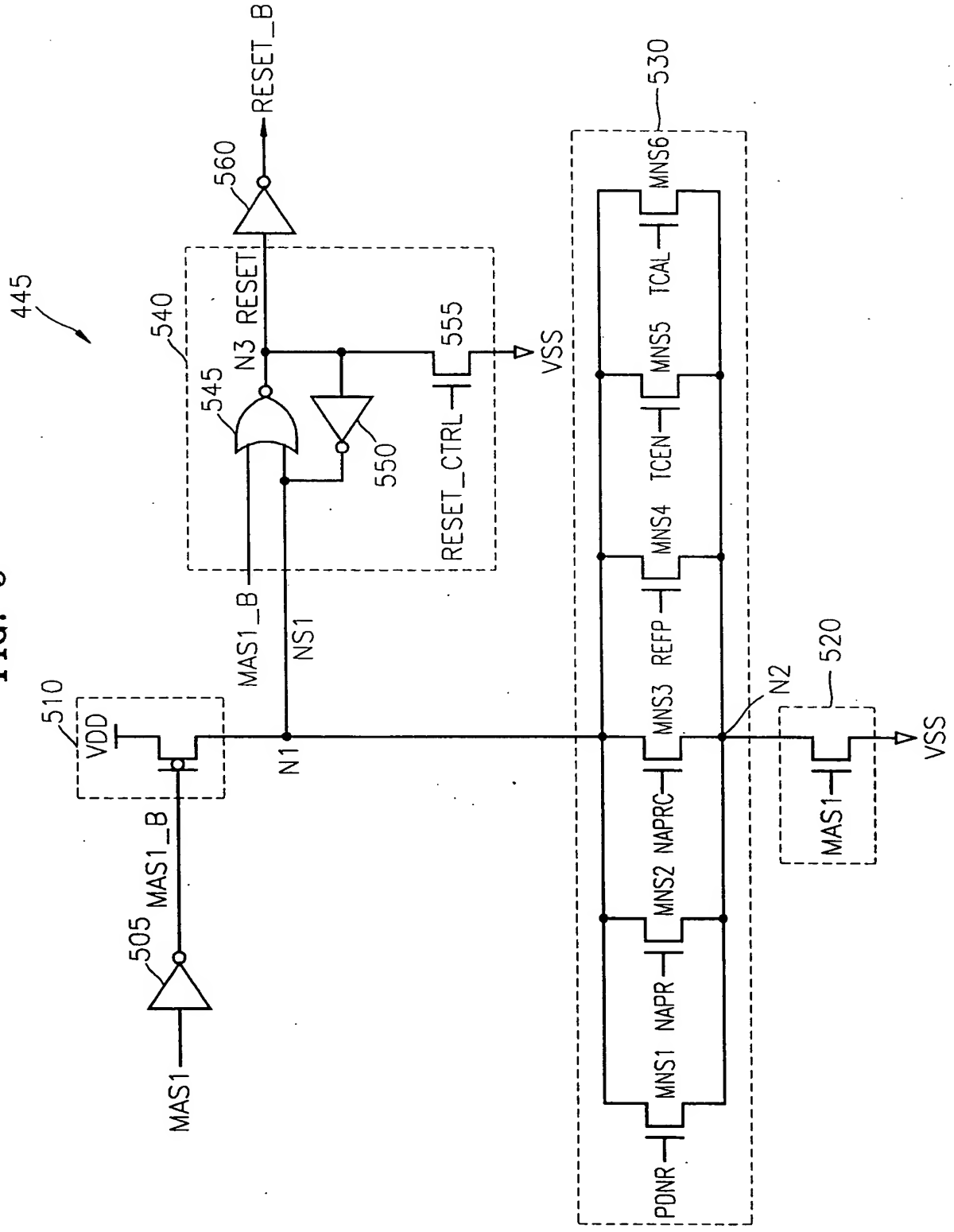
445
540
560
RESET_B
N3 RESET
545
550
555
RESET_CTRL
VSS
530
MNS6
TCAL
MNS5
TCEN
MNS4
REFP
MNS3
NAPRC
MNS2
NAPR
MNS1
PDNR
MAS1_B
NS1
510
VDD
N1
N2
520
MAS1
505
MAS1_B
MAS1

FIG. 6

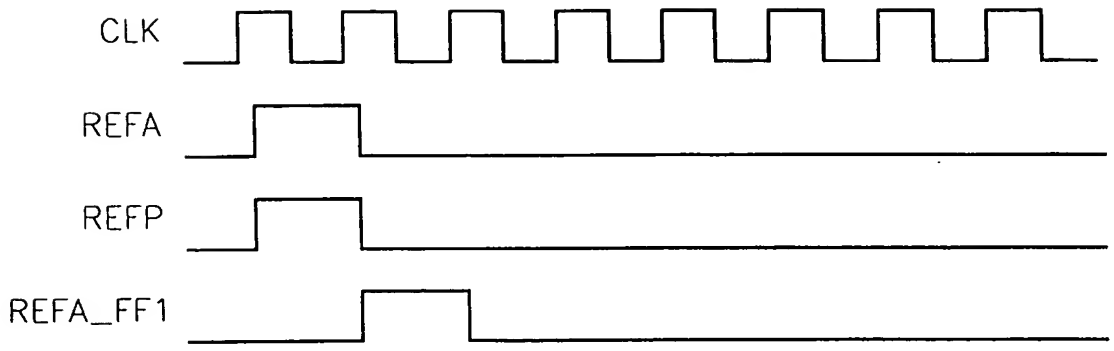
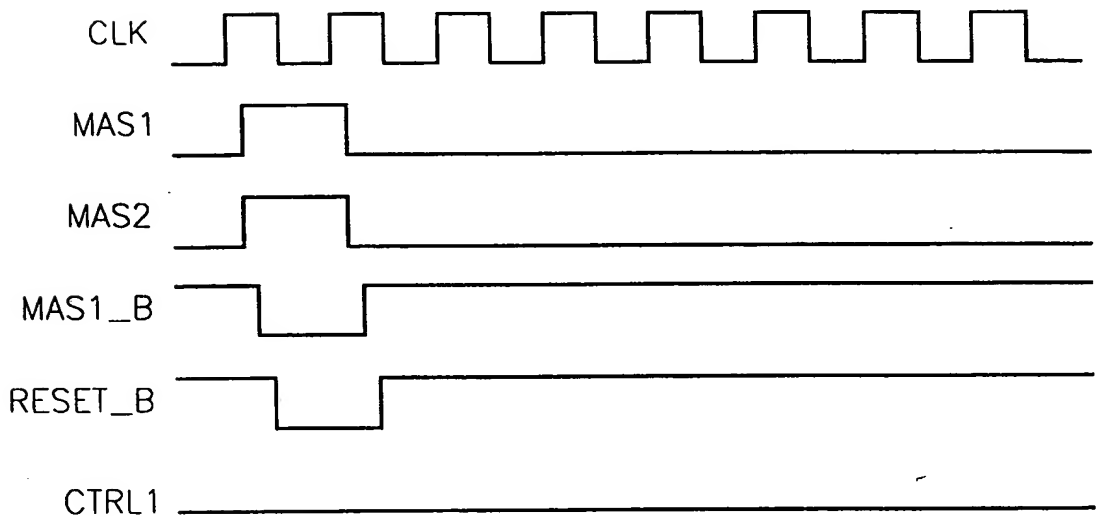
FIG. 7